Communications on

PURE AND APPLIED MATHEMATICS

Contents of Volume XLVII, Nos. 1–12, 1994

NUMBER 1, JANUARY

Frontispiece 1

Dedication 3

Compatible Poisson Structures and the Virasoro Algebra
M. Adler and P. van Moerbeke 5

Disorder of Particle Chains as a Dynamical Problem of Transition to Chaos: Analogy to Simulation Induced Chaos
V. V. Beloshapkin, A. G. Tretyakov, and G. M. Zaslavsky 39

The Principal Eigenvalue and Maximum Principle for Second-Order Elliptic Operators in General Domains
H. Berestycki, L. Nirenberg, and S. R. S. Varadhan 47

A Class of Laplace Transforms Arising in a Diffusion Problem
S. M. Berman 93

Qualitative Analysis of Radiating Breathers
B. Birnir 103

NUMBER 2, FEBRUARY

On the Maslov Index
S. E. Cappell, R. Lee, and E. Y. Miller 121

Totally Invariant Set Functions of Polynomial Type
B. Chen and G.-C. Rota 187

The Collisionless Shock Region for the Long-Time Behavior of Solutions of the KdV Equation
P. Deift, S. Venakides, and X. Zhou 199

On the Zeros of Some Continuous Analogues of Matrix Orthogonal Polynomials and a Related Extension Problem with Negative Squares
H. Dym 207

NUMBER 3, MARCH

Sets of Conductivity and Elasticity Tensors Stable under Lamination
G. A. Francfort and G. W. Milton 257

A Unified Theory of Tokamaks and Stellarators
P. R. Garabedian 281

Stability of the Kuramoto-Sivashinsky and Related Systems
J. Goodman 293

Time-Band Limiting and the Bispectral Problem
F. A. Grünbaum 307

Lévy's Stochastic Area Formula for Gaussian Processes
N. Ikeda, S. Kusuoka, and S. Manabe 329

Speed of Parallel Processing for Random Task Graphs
M. Isopi and C. M. Newman 361

On Malliavin Tensor Fields
K. Itô 377

NUMBER 4, APRIL

Surface Energy and Microstructure in Coherent Phase Transitions
R. V. Kohn and S. Müller 405

The τ-Function of the Universal Whitham Hierarchy, Matrix Models and Topological Field Theories
I. M. Krichever 437

Asymptotics of Certain Wiener Functionals with Degenerate Extrema
S. Kusuoka and D. W. Stroock 477

Trace Formulas for the Schroedinger Operator
P. D. Lax 503

Asymptotics of Heavy Atoms in High Magnetic Fields: I. Lowest Landau Band Regions
E. H. Lieb, J. P. Solovej, and J. Yngvason 513

NUMBER 5, MAY

Potential Theory for Regular and Mach Reflection of a Shock at a Wedge
C. S. Morawetz 593

Smooth Approximation of Mather Sets of Monotone Twist Mappings
J. Moser 625

Pointwise Fourier Inversion and Related Eigenfunction Expansions
M. A. Pinsky 653

Finite Dimensional Lie-Poisson Approximations to Vlasov-Poisson Equations
C. Scovel and A. Weinstein 683

Extension of a Theorem of Mason
H. N. Shapiro and G. H. Sparer 711

On the Cauchy Problem for Equivariant Wave Maps
J. Shatah and A. S. Tahvildar-Zadeh 719

Localization of a Diffusion Process in a One-Dimensional Brownian Environment
H. Tanaka 755

Stochastic Levi Sums
S. Watanabe 767

NUMBER 6, JUNE

Hyperbolic Conservation Laws with Stiff Relaxation Terms and Entropy
G.-Q. Chen, C. D. Levermore, and T.-P. Liu 787

On the Nonlinear Stability of Plane Waves for the Ginzburg-Landau Equation
T. Kapitula 831

The Rate Function of Hypoelliptic Diffusions
G. Ben Arous and J.-D. Deuschel 843

A Boundary Integral Method for Parabolic Equations in Non-Smooth Domains
V. Adolfsson, B. Jawerth, and R. Torres 861

Renormalization Group and Asymptotics of Solutions of Nonlinear Parabolic Equations
J. Bricmont, A. Kupiainen, and G. Lin 893

NUMBER 7, JULY

Existence and Positivity of Solutions of a Fourth-Order Nonlinear PDE Describing Interface Fluctuations
P. M. Bleher, J. L. Lebowitz, and E. R. Speer 923

Propagation of Chaos for Symmetric Simple Exclusions
F. Rezakhanlou 943

A Link between Sets of Tensors Stable under Lamination and Quasiconvexity
G. W. Milton 959

Nonlinear Perturbations of the Kirchhoff Equation
P. D'Ancona and S. Spagnolo 1005

NUMBER 8, AUGUST

The Spectral Theory for a Pencil of Skewsymmetrical Differential Operators of the Third Order
I. M. Gelfand and I. Zakharevich 1031

The Rigidity of Sine-Gordon Breathers
B. Birnir, H. P. McKean, and A. Weinstein 1043

L^1 Asymptotic Behavior of Compressible, Isentropic, Viscous 1-D Flow
Y. Zeng 1053

Convergence of Euler-Stokes Splitting of the Navier-Stokes Equations
J. T. Beale and C. Greengard 1083

On the Numerical Solution of Two-Point Boundary Value Problems II
P. Starr and V. Rokhlin 1117

NUMBER 9, SEPTEMBER

Integral Equations for the Generalized Stokes Operator: Applications to High Reynolds Number Flows
Y. Achdou 1161

Decision Algorithms for Elementary Topology I. Topological Syllogistics with Set and Map Constructs, Connectedness, and Cardinality Comparison
D. Cantone and V. Cutello 1197

Nodal Sets of Solutions of Parabolic Equations: II
Q. Han and F. H. Lin 1219

Continuum Limits for Discrete Gases with Long- and Short-Range Interactions
J. M. Greenberg and A. Nachman 1239

NUMBER 10, OCTOBER

Brownian Motion with a Drift in a Poissonian Potential
A.-S. Sznitman 1283

Computing the Weak Limit of KdV
D. W. McLaughlin and J. A. Strain 1319

Existence of Global Weak Solutions to One-Component Vlasov-Poisson and Fokker-Planck-Poisson Systems in One Space Dimension with Measures as Initial Data
Y. Zheng and A. Majda 1365

Global Uniqueness for a Semilinear Elliptic Inverse Problem
V. Isakov and J. Sylvester 1403

NUMBER 11, NOVEMBER

On Global Representation of Lagrangian Distributions and Solutions of Hyperbolic Equations
A. Laptev, Yu. Safarov, and D. Vassiliev 1411

A Gradient Bound for Entire Solutions of Quasi-Linear Equations and Its Consequences
L. Caffarelli, N. Garofalo, and F. Segala 1457

Hydrodynamical Limit for a Nongradient System: The Generalized Symmetric Exclusion Process
C. Kipnis, C. Landim, and S. Olla 1475

NUMBER 12, DECEMBER

Stability of Shock Profiles in Viscoelasticity with Non-Convex Constitutive Relations
S. Kawashima and A. Matsumura 1547

Uniqueness and Nonuniqueness of Coexistence States in the Lotka-Volterra Competition Model
C. Gui and Y. Lou 1571

Morse-Type Information on Palais-Smale Sequences Obtained by Min-Max Principles
G. Fang and N. Ghoussoub 1595

VI

Shape Theorem, Lyapounov Exponents, and Large Deviations for Brownian Motion in a Poissonian Potential
A.-S. Sznitman 1655

Volume Title Page 1689

Author Index 1691

Volume Contents I